Attorney Docket No. 06618-503001
Application No. 09/922,852
Reply dated January 27, 2004
Response to Office Action dated September 29, 2003

Amendments to the Specification:

Please replace the paragraph beginning at page 1, line 11 with the following amended paragraph:

a1

Properties of a channel affect the amount of data that can be handled by the channel. The so-called "Shannon limit" defines the theoretical ~~limit of~~ limit on the amount of data that a channel can carry.

Please replace the paragraph beginning at page 2, line 5 with the following amended paragraph:

a2

A standard turbo coder is shown in Figure 1. A block of k information bits 100 is input directly to a first encoder 102. A k bit interleaver 110 also receives the k bits and interleaves them prior to applying them to a second encoder 104. The second encoder produces an output that has more bits than its input, that is, it is a coder with a rate that is less than 1.

Please replace the paragraph beginning at page 3, line 11 with the following amended paragraph:

a3

The system can also ~~use codes~~ use component codes in a serially concatenated system. The individual component codes

a3 forming the overall code may be simpler than previous codes. Each simple code individually might be considered useless.

Please replace the paragraph beginning at page 5, line 8 with the following amended paragraph:

a4 The interleaver 220 performs a fixed pseudo-random permutation of the block v, yielding a block w having the same length as v. ~~The permutation can be an identity matrix, where the output becomes identically the same as the input. Alternately and more preferably, the permutation rearranges the bits in a specified way.~~

Please replace the paragraph beginning at page 6, line 16 with the following amended paragraph:

a5 A number of embodiments of the coders are described including a repeat and accumulate ("RA") coder, [[an]] a repeat double accumulate ("RDD") coder and a repeat accumulate accumulate ("RAA") coder.

Please replace the paragraph beginning at page 10, line 12 with the following amended paragraph:

The outer encoder can carry out coding using coding schemes other than simple repetition e.g., a parallel concatenated code 700 as shown in Figure 7. In the most general embodiment, the outer encoder is a (q, k) block code. For example, if k is a multiple of 4, the input block can be partitioned into four bit subblocks, and each 4-bit subblock can be encoded into 8 bits using an encoder for the (8,4) extended Hamming code. Any other short block code can be used in a similar fashion, for example a (23, 12) Golay code.

A6

Please replace the paragraph beginning at page 16, line 8 with the following amended paragraph:

Although only a few embodiments have been disclosed herein, other modifications are possible. For example, the inner coder is described as being close to rate 1. If the rate of the inner coder is ~~greater~~ less than one, certain bits can be punctured using puncturer 702, to ~~decrease~~ increase the ~~bit~~ code rate.

A7